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Applicants: Vinod Jayaraman, Et Al.
Serial No.: 09/491,569
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For: Technique For Reserving
Bandwidth For Communications
Over A Wireless System

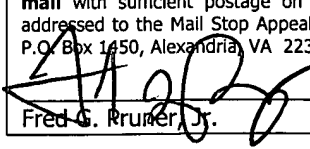
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APPEAL BRIEF

Date of Deposit: March 9, 2005

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Fred G. Bruner, Jr.

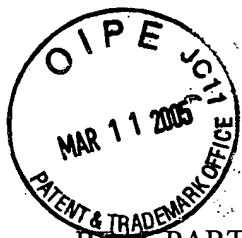


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REAL PARTY IN INTEREST

The real party in interest is the assignee NTT Multimedia Communications Laboratories,
Inc.

RELATED APPEALS AND INTERFERENCES

None.

STATUS OF CLAIMS

Claims 1-37 have been finally rejected and are the subject of this appeal.

STATUS OF AMENDMENTS

All amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

At this point, no issue has been raised that would suggest that the words in the claims have any meaning other than their ordinary meanings. Nothing in this section should be taken as an indication that any claim term has a meaning other than its ordinary meaning.

The method of independent claim 1 includes communicating a request between one of multiple local stations and a central authority to reserve a time slot for transmitting from the local station. As an example, the specification describes cells 50, each of which includes a central authority 52 and local stations 20. *See, for example*, Fig. 1 and the text in lines 25-32 on page 3 of the application. Furthermore, the specification describes that a local station 20 may request a time slot from the central authority 42 for transmitting from the local station. *See, for example*, lines 25-31 on page 3 and lines 1-7 on page 4 of the specification. Specification, pp. 3-4.

The method of independent claim 1 also recites using the central authority to selectively reserve the time slot based on at least in part a reservation schedule. As an example, the specification describes a reservation vector 150 (depicted in Fig. 4) that is used by the central authority to determine whether a particular time slot may be reserved, and the reservation vector 150 indicates the time slots 160 that are reserved for the local stations 20. *See, for example*, lines 29-31 on page 5 and lines 1-7 on page 6 of the specification. Specification, pp. 5-6.

Independent claim 1 also recites that if the central authority reserves the time slot, in response to the beginning of the time slot, the central authority transmits data to the other local stations to prevent the other local stations from transmitting. As an example, the specification describes transmitting a frame that populates the net allocation vectors (NAVs) of the local stations that are not going to transmit during a particular reserve time slot. *See, for example*, lines 21-29 on page 6 of the specification. Specification, p. 6.

Claim 7 depends from claim 6, a claim that depends from independent claim 1. Claim 6 recites that the communication of request between the local station and the central authority includes transmitting a reservation frame between the local station and the central authority. An example of the reservation frame is the Reservation Request Frame (RRF) that is described in part in lines 11-19 on page 5 of the specification. Claim 7 recites that the reservation frame indicates one or more of a traffic priority, a start time and a traffic type. As an example, the specification describes an exemplary RRF 100 in lines 11-28 on page 5 of the specification. Specification, p. 5.

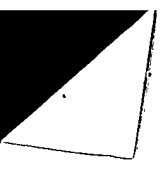
Claim 8 depends from claim 6 and recites that the reservation frame indicates a required throughput in a periodicity of transmissions if the central authority does not know a traffic type of the communication. As an example, the specification in lines 20-28 on page 5 of the application describes a particular embodiment of these features. Specification, p. 5.

Claim 15 depends from independent claim 1 and recites communicating between the central authority and one of the local stations to indicate acceptance or refusal of the request to reserve a time slot. An example of this communication may be found for example, lines 1-7 on page 4 of the specification. Specification, p. 4.

The wireless communication system of independent claim 24 includes local stations and a central authority. The central authority communicates with the local stations over a wireless medium and receives a request from one of the local stations to reserve a time slot for transmission from the local station. The central authority selectively reserves the time slot based on at least in part a reservation schedule; and if the time slot is reserved, the central authority, in response to the beginning of the time slot, transmits data to the other local stations to prevent the other local stations from transmitting. An example of the local stations and central authority is described in the specification on pages 3-6 of the specification. Specification, pp. 3-6.

The article of independent claim 31 includes a machine-readable storage medium that stores instructions to cause a control unit to communicate with local stations over a wireless medium, receive a request from one of the local stations to reserve a time slot for transmissions from the station, selectively reserve the time slot based on at least a reservation schedule and if the time slot is reserved, in response to the beginning of the time slot, transmit data to the other local stations to prevent the other local stations from transmitting. As an example, the specification describes at least one embodiment of the article of claim 31 at least on pages 3-6 and lines 21-26 on page 7 of the specification. Specification, pp. 3-7.

Claim 35 depends from claim 1 and recites that the act of transmitting the data includes populating network allocation vectors of the other local stations. Claim 36 recites that the central authority prevents the other local stations from transmitting by populating network allocation vectors of the other local stations. Claim 37 recites that the storage medium stores instructions to cause the processor to prevent the other local stations from transmitting during the time slot by populating network allocation vectors of the other local stations. As an example, the specification describes in lines 22-30 on page 4 of the specification populating network



allocation vectors (NAVs) of local stations 20 at the beginning of a reserved time slot to prevent the local stations from transmitting. Specification, 4.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

- A. § 103(a) Rejections of Claims 1-15, 17-19, 24-28, 30, 31, 32 and 34-37 as being unpatentable over Chuah in view of Dahlin.**
- 1. § 103(a) Rejection of Independent Claim 1.**
 - 2. § 103(a) Rejection of Dependent Claim 7.**
 - 3. § 103(a) Rejection of Dependent Claim 8.**
 - 4. § 103(a) Rejection of Dependent Claim 15.**
 - 5. § 103(a) Rejection of Independent Claim 24.**
 - 6. § 103(a) Rejection of Independent Claim 31.**
 - 7. § 103(a) Rejections of Dependent Claims 35, 36 and 37.**

ARGUMENT

A. § 103(a) Rejections of Claims 1-15, 17-19, 24-28, 30, 31, 32 and 34-37 as being unpatentable over Chuah in view of Dahlin.

1. § 103(a) Rejection of Independent Claim 1.

The method of independent claim includes communicating a request between one of multiple local stations and a central authority to reserve a time slot for transmitting from the local station. The method of independent claim 1 also recites using the central authority to selectively reserve the time slot based on at least in part a reservation schedule. Independent claim 1 also recites that if the central authority reserves the time slot, in response to the beginning of the time slot, the central authority transmits data to the other local stations to prevent the other local stations from transmitting.

The Examiner rejects independent claim 1 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,115,390 (herein called "Chuah") in view of U.S. Patent No. 5,420,864 (herein called "Dahlin"). Chuah generally discloses a bandwidth reservation technique, and Dahlin generally describes a method of transmitting reservation flags in a mobile radio system.

More particularly, Chuah describes a system in Fig. 22, which includes a request access channel 2220 and a transmission channel 2250. Chuah describes that the remote hosts 2210 (Fig. 22) request access to a base station 2212 using the request channel 2220. Chuah, 10:8-33. The requests are received by a scheduler 2230 that notifies the remote hosts 2210 and wired hosts 2240 of when will be their time to transmit over the transmission channel 2250. Chuah, 10:20-25. Chuah fails at least to teach or suggest in response to the beginning of a reserved time slot, transmitting data to prevent local stations from transmitting.

When based on the modification of a reference, a *prima facie* case of obviousness requires the Examiner to show where the prior art contains the alleged suggestion or motivation for the modification. M.P.E.P. § 2143. More specifically, for the instant application, this requirement means the Examiner must show where the prior art contains the alleged suggestion or motivation for the modification of Chuah in view of Dahlin to derive the claimed invention. However, for at least the reasons that are set forth below, Applicant submits that the Examiner

fails to comply with this requirement and thus, fails to establish a *prima facie* case of obviousness for independent claim 1.

In order to combine Chuah and Dahlin to derive the claimed invention, Chuah's system must be modified so that in response to the beginning of a particular reserved time slot, the scheduler 2230 (or other entity) transmits data to the remotes 2210 or wired hosts 2240 that are not using the reserved time slot to prevent the remotes 2210 or wired hosts 2240 from transmitting. However, the Examiner has not shown where the prior art contains the alleged suggestion or motivation for this modification of Chuah.

The Examiner appears to rely on Dahlin for the alleged suggestion or motivation. However, Dahlin discloses a technique for communicating over a control channel, not a traffic channel. Therefore, Dahlin's disclosure is at best only applicable to communications that occur over Chuah's request channel 2220.

More specifically, Dahlin discloses a technique of communicating over a forward control channel (called DFOCC) and a reverse control channel (called DRECC). Dahlin discloses continuously transmitting flags to indicate whether a particular slot of a *control channel* is reserved, busy, etc. (*emphasis added*). In this regard, Dahlin teaches that the base station continuously transmits messages in control channel time slots 1 and 4. Dahlin, 4:11-12 and 3:20-25. Thus, the reservation flag that is disclosed in Dahlin indicates whether a time slot in a control channel is reserved for purposes of communicating a control message over the control channel. The message is communicated via the "Data D" field that is disclosed in Figs. 2 and 3 of Dahlin. Dahlin, 3:31-45. These control messages may be used for such purposes as responding to an authorization query from the base station. Dahlin, 3:46-49. However, there is no teaching or suggestion in Dahlin regarding transmitting the reservation flags or reserving time slots for messages in non-control channels, i.e., traffic channels.

Thus, applying the teachings of Dahlin to Chuah, at best, one arguably may have been motivated to employ the control channel time slot reservation notification of Dahlin to the request channel of Chuah. In this regard, Chuah discloses that time slots for control messages are reserved based on communications over its request channel. Chuah, 9:65-67 and 10:1-11. However, Chuah discloses that transmissions on its request channel, i.e., a control channel, "are on a multiple access basis." Chuah, 9:65-66. Thus, at best, one skilled in the art in view of Dahlin may have been motivated to modify Chuah's system so that communications over the

request channel use the reservation flags. However, the modification of Chuah in this manner does not prevent local stations from transmitting over a traffic channel during a reserved time slot. To summarize, the Examiner has failed to show where the prior art contains the requisite suggestion or motivation to apply Dahlin's control channel reservation flag scheme to Chuah's traffic channel reservation technique.

Therefore, neither Chuah nor Dahlin contains the requisite suggestion or motivation for the modification of Chuah so that the reservation flags are transmitted over the transmission channel 2250 of Chuah to prevent the remotes 2210 or wired hosts 2240 from transmitting. Without such a suggestion or motivation, a *prima facie* case of obviousness has not been established for independent claim 1.

"Obviousness cannot be predicated on what is unknown." *In re Spormann*, 363 F.2d 444, 448, 150 USPQ 449, 452 (CCPA 1966). Rather, the Examiner must show that one skilled in the art, *without knowledge of the claimed invention*, would have modified Chuah in view of Dahlin to derive the claimed invention. As set forth above, even assuming, for purposes of argument, that the suggestion or motivation for the general combination of Chuah and Dahlin exists, this combination does not produce the claimed invention. Therefore, for at least the reason that the Examiner fails to show where the prior art contains the alleged suggestion or motivation to modify Chuah in view of Dahlin to derive the claimed invention, a *prima facie* case of obviousness has not been set forth for independent claim 1.

2. § 103(a) Rejection of Dependent Claim 7.

Claim 7 depends from independent claim 1 and recites that the reservation frame indicates one or more of a traffic priority, a start time and a traffic type.

The Examiner rejects claim 7 under 35 U.S.C. § 103(a) in view of the combination of Chuah and Dahlin. Claim 7 is patentable for at least the reason that this claim depends from an allowable independent claim. However, claim 7 is patentable for the additional, independent reason that is set forth below.

The Examiner fails to specifically address the limitations of claim 7 by showing where these limitations are allegedly taught or suggested in either Dahlin or Chuah. Instead, the Examiner refers to portions of Chuah to allegedly teach that the base station bases priority on a connection identity, bases a start time when reservation is received and bases a traffic type for an

uplink frame. However, none of the cited language teaches or suggests a *reservation frame* that indicates one or more of a traffic priority, start time and a traffic type (*emphasis added*). Rather, Chuah simply mentions that the remote devices transmit access requests via a request channel to the base station. The specifics of a "reservation frame" containing the specific features that are recited in claim 7 are not, however, taught or suggested. Dahlin does not teach or suggest the missing claim limitation. Therefore, for at least the additional, independent reason that the hypothetical combination of Chuah and Dahlin fails to teach or suggest the specific limitations of claim 7, this claim overcomes the § 103 rejection.

3. § 103 Rejection of Dependent Claim 8.

Claim 8 ultimately depends from claim 1 and recites that the reservation frame indicates a required throughput and a periodicity of transmissions if the central authority does not know a traffic type of the communication.

The Examiner rejects claim 8 under 35 U.S.C. § 103(a) in view of the combination of Chuah and Dahlin.

However, as set forth above in the discussion of claim 7, Chuah does not disclose a reservation frame or the specific format of a request for reservation. For similar reasons, Chuah fails to teach or suggest a reservation frame that contains the additional limitations that are presented by claim 8. Furthermore, Dahlin fails to teach or suggest these limitations. Therefore, for at least the additional, independent reason that the hypothetical combination of Chuah and Dahlin fails to teach or suggest the specific limitations of claim 8, this claim overcomes the § 103 rejection.

4. § 103 Rejection of Dependent Claim 15.

Claim 15 depends from independent claim 1 and recites communicating between the central authority and the local station(s) to indicate acceptance or refusal of the request.

The Examiner rejects dependent claim 15 under 35 U.S.C. § 103(a) in view of the combination of Chuah and Dahlin.

Regarding claim 15, the Examiner refers to the language in lines 7-14 of column 5 and lines 35-38 in column 17 of Chuah. However, this language merely refers to collisions that occur when more than one entity is transmitting during a particular time slot. This language does

not, however, teach or suggest communicating between a central authority and a local station to indicate acceptance or refusal of a request. Therefore, the cited language does not teach or suggest whether a particular reservation request was accepted or denied. Dahlin likewise fails to teach or suggest the missing claim limitations. Therefore, for at least the additional, independent reason that the hypothetical combination of Chuah and Dahlin fails to teach or suggest the specific limitations of claim 15, this claim overcomes the § 103 rejection.

5. § 103 Rejection of Independent Claim 24.

The wireless communication system of independent claim 24 includes local stations and a central authority. The central authority communicates with the local stations over a wireless medium and receives a request from one of the local stations to reserve a time slot for transmission from the local station. The central authority selectively reserves the time slot based on at least in part a reservation schedule, and if the time slot is reserved, the central authority, in response to the beginning of the time slot, transmits data to the other local stations to prevent the other local stations from transmitting.

The Examiner rejects independent claim 24 under 35 U.S.C. § 103(a) in view of the combination of Chuah and Dahlin.

As discussed above in connection with independent claim 1, the combination of Chuah and Dahlin does not teach or suggest the central authority of claim 24. Rather, Dahlin is directed to a technique of transmitting reservation flags and control messages in a control channel, whereas the reservation frames in Chuah are directed to non-control traffic reservation. Thus, the combination of Dahlin and Chuah, assuming this combination is proper, does not produce the claimed invention without using the hindsight that is gleaned from the current application. Therefore, for at least this reason, a *prima facie* case of obviousness has not been established for independent claim 24.

6. § 103 Rejection of Independent Claim 31.

The article of independent claim 31 includes a machine-readable storage medium that stores instructions to cause a control unit to communicate with local stations over a wireless medium, receive a request from one of the local stations to reserve a time slot for transmissions

from the station, selectively reserve the time slot based on at least a reservation schedule and if the time slot is reserved, in response to the beginning of the time slot, transmit data to the other local stations to prevent the other local stations from transmitting.

The Examiner rejects independent claim 31 under 35 U.S.C. § 103(a) in view of the combination of Chuah and Dahlin. However, as set forth above in the discussion of claims 1 and 24, the combination of Dahlin and Chuah does not teach or suggest the claimed invention, as even assuming, for purposes of argument, that the general combination of Dahlin and Chuah is proper, the transmission of reservation flags would occur over a control channel, not over the traffic channels that are reserved in the scheme disclosed in Chuah. Therefore, for at least the reasons that the Examiner fails to show where the prior art contains the alleged suggestion or motivation for the modification of Chuah in view of Dahlin to derive the claimed invention, a *prima facie* case of obviousness has not been set forth for independent claim 31.

7. § 103 Rejections of Dependent Claims 35, 36 and 37.

Claim 35 depends from claim 1 and recites that the act of transmitting the data includes populating network allocation vectors of the other local stations. Claim 36 recites that the central authority prevents the other local stations from transmitting by populating network allocation vectors of the other local stations. Claim 37 recites that the storage medium stores instructions to cause the processor to prevent the other local stations from transmitting during the time slot by populating network allocation vectors of the other local stations.

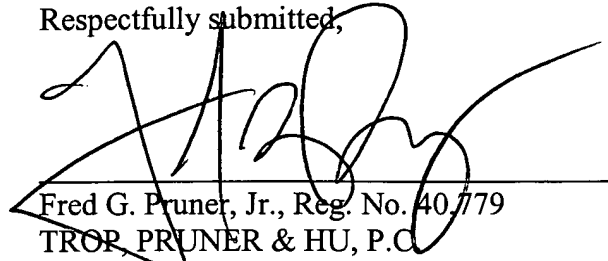
The Examiner rejects claims 35, 36 and 37 under 35 U.S.C. § 103(a) in view of the combination of Chuah and Dahlin. However, the Examiner does not specifically address the specific limitations that are presented in each of these claims.

A "network allocation vector" is a recognized term in the art. Dahlin's reservation flag, a flag that indicates whether a control channel time slot is reserved or not, fails to teach or suggest such a network allocation vector. Furthermore, Chuah fails to teach or suggest the missing claim limitations.

All claim limitations must be taught or suggested by the prior art. M.P.E.P. § 2143. Thus, for at least this additional, independent reason, a *prima facie* case of obviousness has not been set forth for claim 35, 36 or 37.

Applicant respectfully requests that each of the final rejections be reversed and that the claims subject to this Appeal be allowed to issue.

Respectfully submitted,

A large, stylized handwritten signature in black ink, appearing to read 'Fred G. Pruner, Jr.', is written over a horizontal line.

Date: March 9, 2005

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CLAIMS APPENDIX

The claims on appeal are:

1. A method usable with a wireless medium and local stations, comprising:
communicating a request between one of the local stations and a central authority to reserve a time slot for transmitting from said one of the local stations;
using the central authority to selectively reserve the time slot based on at least in part a reservation schedule; and
if the central authority reserves the time slot, in response to the beginning of the time slot, transmitting data to the other local stations to prevent the other local stations from transmitting.
2. The method of claim 1, further comprising:
transmitting real time information from said one of the local stations during the time slot.
3. The method of claim 2, wherein the real time information indicates an audio stream.
4. The method of claim 2, wherein the real time information indicates a video stream.
5. The method of claim 1, wherein the local stations and the central authority form at least part of a wireless local area network.
6. The method of claim 1, wherein the communicating the request comprises:
transmitting a reservation frame between said one of the local stations and the central authority.
7. The method of claim 6, wherein the reservation frame indicates one or more of the following:
a traffic priority, a start time, and a traffic type.

8. The method of claim 6, wherein the reservation frame indicates a required throughput and a periodicity of transmissions if the central authority does not know a traffic type of the communication.

9. The method of claim 1, wherein the central authority bases reservation of the time slot at least in part on underlying network properties.

10. The method of claim 9, wherein the underlying network properties may include one or more of the following:

a throughput, latency and the bit error rate in the transmission of frames.

11. The method of claim 1, wherein the central authority bases reservation of the time slot at least in part on characteristics of a traffic to be transmitted during the time slot.

12. The method of claim 11, wherein the characteristic may include one or more of the following:

a required throughput and a maximum delay between successive frames that are communicated over the wireless medium.

13. The method of claim 1, wherein the central authority bases reservation of the time slot at least in part on an amount of bandwidth already reserved for other stations.

14. The method of claim 1, wherein the central authority bases reservation of the time slot at least in part on a policy associated with said one of the local stations.

15. The method of claim 1, further comprising:
communicating between the central authority and said one of the local stations to indicate acceptance or refusal of the request.

16. The method of claim 1, further comprising:
before the beginning of the reserved time slot, transmitting a frame from the central authority to update a network allocation vector of each local station with a duration of the time slot to cause at the remaining local stations to ascertain that the wireless medium is busy during the time slot.

17. The method of claim 1, wherein the selective reservation by the central authority is further based at least in part on the reservation schedule maintained by the central authority, and the local stations and the central authority are associated with a cell, the method further comprising:

communicating the request the central authority and another central authority that is associated with another cell.

18. The method of claim 1, further comprising:
using the central authority to cancel the reserved time slot.

19. The method of claim 18, wherein the central authority selectively cancels the reserved time slot based on whether said one of the local stations did not transmit during a previously scheduled time slot.

20. The method of claim 18, wherein the central authority selectively cancels the reserved time slot based on whether said one of the local stations transmits a cancellation request.

21. The method of claim 1, wherein at least some of the local stations are located within a cell that includes multiple access points, the method further comprising:
using the central authority to route real time traffic through the one of the access points that has the least amount of existing traffic.

22. The method of claim 1, wherein at least some of the local stations are located within a cell that has multiple carrier frequencies that overlap in the cell, the method further comprising:
using the central authority to transmit real time traffic using the carrier frequency that best meets a predefined criteria.

23. The method of claim 22, wherein the predefined criteria comprises at least one of the following: bit error rate and the latency of the medium.

24. A wireless communication system comprising:
local stations; and
a central authority to:
communicate with the local stations over a wireless medium,
receive a request from one of the local stations to reserve a time slot for
transmissions from said one of the local stations,
selectively reserve the time slot based on at least in part a reservation schedule,
and
if the time slot is reserved, in response to the beginning of the time slot, transmit
data to the other local stations to prevent the other local stations from transmitting.

25. The system of claim 24, wherein said one of the local stations transmits real time information during the time slot.

26. The system of claim 24, wherein said one of the local stations is adapted to transmit a reservation frame to the central authority to communicate the request.

27. The system of claim 26, wherein the reservation frame indicates one or more of the following:

a traffic priority, a start time, and a traffic type.

28. The system of claim 26, wherein the reservation frame indicates a required throughput and a periodicity of transmissions if the central authority does not know a traffic type of the communication during the time slot.

29. The system of claim 24, wherein the central authority, before the beginning of the reserved time slot, transmits a frame to update a network allocation vector of each local station with a duration of the time slot to cause at the remaining local stations to ascertain that the wireless medium is busy during the time slot.

30. The system of claim 24, wherein the selective reservation by the central authority is further based at least in part on the reservation schedule maintained by the central authority, the local stations and the central authority are associated with a cell, and the central authority is adapted to communicate the request between the central authority and a second central authority that is associated with another cell.

31. An article comprising a machine-readable storage medium storing instructions to cause a control unit to:

communicate with local stations over a wireless medium,

receive a request from one of the local stations to reserve a time slot for transmissions from said one of the local stations,

selectively reserve the time slot based on at least in part a reservation schedule, and if the time slot is reserved, in response to the beginning of the time slot, transmit data to the other local stations to prevent the other local stations from transmitting.

32. The article of claim 31, wherein said one of the local stations communicates real time information during the time slot.

33. The article of claim 31, wherein the storage medium stores instructions to cause the control unit, before the beginning of the reserved time slot, transmit a frame to update a network allocation vector of each local station with a duration of the time slot to cause at the remaining local stations to ascertain that the wireless medium is busy during the time slot.

34. The article of claim 31, wherein the local stations and the control unit are associated with a cell and the control unit is adapted to communicate the request between the control unit and a central authority that is associated with another cell, the storage medium storing instructions to cause the control unit to base the selective reservation on the reservation schedule maintained by the control unit.

35. The method of claim 1, wherein the transmitting data comprises:
populating network allocation vectors of the other local stations.

36. The system of claim 24, wherein the central authority prevents the other local stations from transmitting by populating network allocation vectors of the other local stations.

37. The article of claim 31, wherein the storage medium stores instructions to cause the processor to prevent the other local stations from transmitting during the time slot by populating network allocation vectors of the other local stations.